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Remarks

Reconsideration of the above referenced application in view of the enclosed amendment and remarks is requested. Claims 31-34 have been added. Claims 1, 5, 7, 10-11, 15, 17, 20- 21, 25, and 27 have been amended. Claims 10 and 20 have been amended to correct punctuation standardization only. Thus, the scope of amended Claims 10 and 20 is identical to the claims as originally filed. Claims 7, 17 and 27 have been amended merely to put them in independent form. They include no additional elements or limitations and thus deserve to be treated as if no amendments have been made, for the purpose of determining equivalents under the doctrine of equivalents. Existing claims 1-30 remain in the application. Claims 1-34 are now pending.

ARGUMENT

Claims 1, 2, 5, 6 and 9 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,506,699A to Wong (hereafter, "Wong"). This rejection is respectfully traversed and Claims 1, 2, 5, 6 and 9 are believed allowable as amended based on the following discussion.

Wong teaches a method and apparatus for converting a halftone image into a continuous tone image. Wong teaches a method using a low pass filter and statistical smoothing (Fig. 2). Claim 1, as amended, requires detecting an edge in the smoothed image. At Col. 6, lines 12-20, Wong discusses that the sample variant of the defined neighborhood of an edge tends to be larger than in the case in which the window does not contain an edge. Wong merely states an axiom of halftone images. Further, Wong discloses that statistical smoothing results in a gray scale image without overly blurring the image at its edges. It is implied that the performance of statistical smoothing on a halftone image provides less blurred edges. At no time does Wong teach a device which detects an edge in a smoothed image.

Specifically regarding Claim 5, the Examiner cites Col. 5, lines 13-18, and implies that Wong teaches a low pass filter (halfband filter) that acts only in regions that will be blurred by the smoothing operation. The Examiner implies that the halfband filter taught by Wong acts as an edge detector because it results in less blurring of the image at the edges. This line of reasoning is faulty for the same reasons as previously stated. It will be apparent to one of

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ordinary skill in the art that the act of *detecting an edge,* as recited in the Claims, is not at all equivalent to the performance of an act that as a *byproduct* provides less blurred edges. Moreover, at no time does Wong teach or suggest applying an edge filter to an already smoothed image, as specifically recited in Claim 6.

Specifically with regard to Claim 9, the Examiner asserts that Wong teaches all of the recited elements. Further to the discussion above, at no time does Wong teach or suggest generating an enhanced image of a previously smoothed and filtered image. Figure 2 of Wong clearly shows only two steps for generating a tone image: low pass filtering, and statistical smoothing. At no time does Wong teach or suggest that the output of Fig. 2 can be enhanced further by generating an enhanced image comprised of the edge areas of the smoothed image and lowpass-filtered non-edge areas of the smoothed image, as recited in Claim 9. Thus, Claims 1-6, and 9-10 are allowable as amended.

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Wong in view of U.S. Patent 5,333,064 to Seidner et al. (hereafter, "Seidner et al."). This rejection is respectfully traversed and Claim 4 is believed allowable as amended based on the foregoing and following discussion.

Seidner et al. teach an apparatus and method for descreening and for performing resolution changes on a half-tone image in order to produce a continuous tone image. The combination of the teachings of Wong and Seidner et al. do not provide all of the elements recited in Claim 4. Specifically, Claim 4 requires detecting an edge in the smoothed image. This element is neither taught nor suggested by the cited references. Thus, Claim 4 is believed allowable as amended.

Claims 3, 7, 8, 10-13, 15-23 and 25-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wong in view of U.S. Patent 5,027,078A to Fan (hereafter, "Fan"). This rejection is respectfully traversed and Claims 3, 7, 8, 10-13, 15-23 and 25-30 are believed allowable as amended based on the foregoing and following discussion.

Fan teaches a method of unscreening a digitally created halftone image to reconstruct a continuous tone image, including the determination of the parameters of the halftone screen used to generate the halftone image. Regarding Claim 3, the Examiner asserts that Fan teaches a one-dimensional filter that is equivalent to a two-dimensional filter. However, Fan teaches applying

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a filter (18) before an optional smoothing operation (22) in Fig. 1. Claim 3 requires *applying a one-dimensional filter to a pixel in the smoothed image*. At no time does Fan suggest applying the filter to a previously smoothed image. Thus, there is no motivation to apply a one-dimensional filter to Wong, especially since the smoothing operation of Fan is not even required.

Regarding Claim 7, the Examiner asserts that the low pass filter taught by Wong is a median filter. This assertion is unfounded. Wong teaches "determining a sample mean value representing an averaging of pixel values within a neighborhood containing a selected pixel" (Wong, Abstract). Emphasis added. Appendix A is a web page definition of a median filter as understood by those of skill in the art. While the date of this recently found reference is unknown, it serves to illustrate the commonly understood definition of a median filter. A median filter differs from a mean, or averaging, filter. A median filter does not simply replace the pixel value with the mean of neighboring pixel values, it replaces it with the median of those values. None of the cited references teach or suggest using a median filter at any time during the processing of the halftone image. Further, none of the cited references teach or suggest that a smoothed and filtered image can be *further* enhanced by applying a median filter, as recited in Claim 7. Thus, Claim 7 is believed allowable as amended.

Claims 8 and 10 are addressed in the previous discussion and are believed allowable as amended based on the foregoing and following discussions. Claims 11-13, 15-23 and 25-30 have been addressed in he previous discussion as similar to claims 1-3, 5-13 and 5-10, respectively, and are believed allowable as amended based on the foregoing discussions.

Claim 14 and 24 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Wong in view of Fan and further in view of Seidner et al. This rejection is respectfully traversed and Claims 14 and 24 are believed allowable as amended based on the foregoing discussion with regard to Claim 4. Thus, all claims remaining in the application are now allowable.

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CONCLUSION

In view of the foregoing, Claims 1-34 are all in condition for allowance. If the Examiner has any questions, the Examiner is invited to contact the undersigned at (703) 633-6845. Early issuance of Notice of Allowance is respectfully requested. Please charge any shortage of fees in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-0221 and please credit any excess fees to such account.
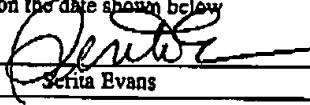
Respectfully submitted,

Dated: 6/22/2004
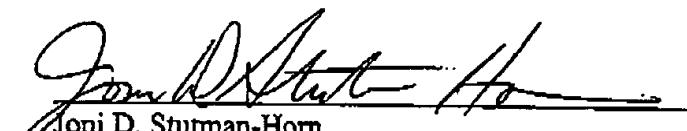
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By: _____ Serita Evans   Date: June 22, 2004

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